



HPA Pandemic Influenza Strategic Framework

The HPA's strategic roles and actions for preparation and response to an influenza pandemic

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Executive Summary

The Health Protection Agency has a major public health role in supporting UK preparations for an effective response to an influenza pandemic. This plan is for use by Health Protection Agency staff and provides a reference document for partner agencies. The plan includes summaries of the epidemiology and modelling of an influenza pandemic, as well as infection control assumptions.

The plan puts the Health Protection Agency's response in the context of the Department of Health's "*UK Influenza Pandemic Preparedness Strategy 2011*"¹ and "*Health and Social Care Influenza Pandemic Preparedness and Response*"² guidance documents. The most significant change relates to the adoption of the revised UK response categories/ phases:

- Detection
- Assessment
- Treatment
- Escalation
- Recovery

The Health Protection Agency's role and responsibilities during each of these categories are outlined in Section 3. This is an interim document which will be current until the establishment of Public Health England in April 2013.

1 Introduction

1.1 Aim

To describe the Health Protection Agency's strategic roles and actions for preparation and response to an influenza pandemic.

1.2 Objectives

The objectives of this plan are to:

Outline the key HPA roles and responsibilities during each of the phases – Detection, Assessment, Treatment, Escalation, and Recovery.

1.3 Scope

Direct the resources of the HPA to effectively support the national response to an escalating threat from a novel influenza subtype and an influenza pandemic. The Department of Health (DH) is the lead government department in England for coordinating the health response to an influenza pandemic. It will also perform a number of lead functions for the Devolved Administrations of Scotland, Wales and Northern Ireland and take overarching responsibility for the UK response.

The HPA has specific responsibilities within England and Wales (the latter, in conjunction with Public Health Wales) and cooperates closely with its counterparts in Scotland and Northern Ireland. The HPA collaborates with all UK Devolved Administrations and their health protection services to optimise the UK's preparedness and response to pandemic influenza. In the event of a pandemic the HPA will collate UK surveillance data for the purpose of providing regular updates to DH and the Civil Contingencies Committee (CCC).

This document is based on flexible planning assumptions consistent with the DH "UK Influenza Pandemic Preparedness Strategy 2011" and the DH "Health and Social Care Influenza Pandemic Preparedness and Response 2012".

The document does not cover planning for, or the response to, seasonal influenza outbreaks or any incidents involving the prevention or control of avian influenza in birds or other influenza virus infections in animals. However, it does cover the recognition and management of cases of influenza-like illness in humans that raise suspicions of a new influenza virus variant that might cause a pandemic.

1.4 Structure and content

Following the publication of DH's "UK Influenza Pandemic Preparedness Strategy 2011", the "Health and Social Care Influenza Pandemic Preparedness and Response 2012" and the "Health Protection Agency - Incident and Emergency Response Plan"³, this document sets out the overall responsibilities for Divisions, Centres and Networks, together with the overarching emergency response arrangements for the HPA.

The structure of this document uses the revised phases from the "*UK Influenza Pandemic Preparedness Strategy 2011*" to underpin the response, and provides a matrix of integrated preparedness and response functions from all parts of the HPA, set against these phases.

The 'implementer' identified against each strategic task is responsible for ensuring that the action is carried out, but may choose to delegate the actual task according to local considerations. This action matrix serves as a performance management and benchmarking tool for use within the HPA, linking to individual departments' tactical and operational pandemic flu plans.

The appendices include brief summaries of the role and responsibilities of other health organisations and partners. Also included are outlines of the epidemiology and modelling of an influenza pandemic and infection control assumptions (April 2012).

This document, the *HPA Pandemic Influenza Strategic Framework 2012*, is a living document and will be revised and updated in April 2013 with the advent of Public Health England.

1.5 Audience

This document is primarily for HPA internal strategic direction. However, it is publicly available to stakeholders and partners to fulfil the Agency's obligations to share information with partners under the *Civil Contingencies Act (2004)*⁴.

This Framework has been informed by the DH "*UK Influenza Pandemic Preparedness Strategy 2011*" and the "*Health and Social Care Influenza Pandemic Preparedness and Response 2012*" following recommendations of the Hine Report 2010⁵ on the Pandemic in 2009.

2 Context

2.1 Principles and planning assumptions

The World Health Organisation (WHO) is responsible for identifying and declaring influenza pandemics.⁶ However, as one of the first affected countries in 2009, the UK was well into the first wave of infection when WHO declared Phase 6. The use of WHO phases to trigger different stages of the local response proved confusing and unhelpful and it was therefore decided that a more flexible approach was needed for the UK.

The "*UK Influenza Pandemic Preparedness Strategy 2011*" and the "*Health and Social Care Influenza Pandemic Preparedness and Response 2012*" detail the planning, response and recovery for all severities of pandemic influenza. The uncertainties in any pandemic mean that the reality of a pandemic may be different from the planning assumptions, and that any plan will need to be modified to account for changing circumstances. The national response may also need to be adapted locally during a pandemic to take account of regional or local 'hot spots'.

The HPA provides expert public health, virological, microbiological, epidemiological and modelling advice to the Department of Health. This has contributed to the development of the planning assumptions presented in the "*UK Influenza Pandemic Preparedness Strategy 2011*" for responding to an influenza pandemic. The same assumptions have been used in the preparation of this document.

UK Response Phases

The new UK approach is not driven by the WHO phases. The rationale for this is described in detail the "*UK Influenza Pandemic Preparedness Strategy 2011*" and uses a series of phases: **detection, assessment, treatment, escalation and recovery**. It also incorporates indicators for moving from one phase to another.

The phases are not numbered as they are not linear, may not follow in strict order, and it is possible to move back and forth or jump phases. There will also be variation in the status of different parts of the country reflecting local attack rates, circumstances and resources.

Detection – Triggered by either the declaration of WHO Phase 4, on the basis of reliable intelligence or if an influenza related “Public Health Emergency of International Concern” (PHEIC) is declared by the WHO (see Appendix 6 for description of WHO phases). The focus in this stage would be:

- Intelligence gathering from countries already affected
- Enhanced surveillance within the UK
- The development of diagnostics specific to the new virus
- Information and communications to the public and professional
- The indicator for moving to the next stage would be the identification of the novel influenza virus in patients in the UK.

Assessment – The focus in this stage would be:

- The collection and analysis of detailed clinical and epidemiological information on early cases on which to base early estimates of impact and severity in the UK.
- Reducing the risk of transmission and infection with the virus within the local community by:
 - Actively finding cases
 - Voluntary self-isolation of cases and suspected cases
 - Treatment of cases/suspected cases and use of antiviral prophylaxis for close/vulnerable contacts, based on a risk assessment of the possible impact of the disease.

The indicator for moving from this stage would be evidence of sustained community transmission of the virus, i.e. cases not linked to any known or previously identified cases.

These two phases - *Detection and Assessment* - together form the *initial* response. This stage may be relatively short and the phases may be combined depending on the speed with which the virus spreads, or the severity with which individuals and communities are affected. It will not be possible to halt the spread of a new pandemic; to attempt to do so would waste scarce public health resources and capacity.

Treatment – The focus in this phase would be:

- Treatment of individual cases and population treatment, if necessary, using the National Pandemic Flu Service (NPFs)
- Enhancement of the health response to deal with increasing numbers of cases
- To consider enhancing public health measures to disrupt local transmission of the virus as appropriate, such as localised school closures based on public health risk assessment.
- Depending upon the development of the pandemic, to prepare for targeted vaccinations as the vaccine becomes available.

Arrangements will be activated to ensure that necessary detailed surveillance activity continues in relation to samples of community cases, hospitalised cases and deaths. When demands for services start to exceed the available capacity, additional measures will need to be taken. This decision is likely to be made at a regional or local level as not all parts of the UK will be affected at the same time or to the same degree of intensity.

Escalation – The focus in this phase would be:

- Escalation of surge management arrangements in health and other sectors
- Prioritisation and triage of service delivery with aim to maintain essential services
- Resiliency measures, encompassing robust contingency plans

- Consideration of de-escalation of response if the situation is judged to have improved sufficiently

These two phases - *Treatment and Escalation* - form the *treatment* component of the pandemic. Whilst escalation measures may not be needed in mild pandemics, it would be prudent to prepare for the implementation of the *escalation* phase at an early stage, if not before.

Recovery – The focus in this phase would be:

- Normalisation of services, perhaps to a new definition of what constitutes normal service
- Restoration of business as usual services, including an element of catching-up with activity that may have been scaled-down as part of the pandemic response e.g. reschedule routine operations
- Post-incident review of response, and sharing information on what went well, what could be improved, and lessons learnt
- Taking steps to address staff exhaustion
- Planning and preparation for a resurgence of influenza, including activities carried out in the detection phase
- Continuing to consider targeted vaccination, when available
- Preparing for post-pandemic seasonal influenza

The indicator for this phase would be when influenza activity is either significantly reduced compared to the peak or when the activity is considered to be within acceptable parameters. An overview of how service capacities are able to meet demand will also inform this decision.

The uncertainties in any pandemic mean that the actual characteristics of the pandemic may be different from the planning assumptions, and that planned actions may need to be modified to take account of changing circumstances.

2.2 HPA role in the national response

In order to support UK cross-government decision making, the Cabinet Office Briefing Room (COBR) will activate a Scientific Advisory Group for Emergencies (SAGE) to coordinate strategic scientific and technical advice. The Department of Health, as lead Government department, will work closely with the devolved administrations (DAs). “*Responding to emergencies – The UK central government response concept of operations*”⁷ details the government actions in an emergency such including an influenza pandemic.

At the beginning of a pandemic there will be uncertainty about the effects of the disease and course of the pandemic. Scientific and clinical advice alongside expert judgement will be important in directing the response. SAGE will coordinate strategic scientific and technical advice to support UK cross-government decision making. This would include ensuring a common understanding of the scientific aspects of the pandemic, providing advice on prognosis and scientific evidence supporting decision making and highlighting the nature and extent of any uncertainties or differences in expert opinion.

England’s Chief Medical Officer (CMO) acts as the UK Government’s principal source of public health advice and information. Each of the DAs also has a CMO and, working collaboratively, they ensure a comprehensive and coordinated UK-wide public health approach.

The HPA has a key supporting role to the CMO and SAGE, providing expert clinical and scientific advice, in partnership with other key health protection organisations.

The HPA national response

The HPA's "Pandemic Influenza Strategic Framework 2012" sets out the HPA's strategic response to an influenza pandemic in the context of the UK Influenza Pandemic Preparedness Strategy.

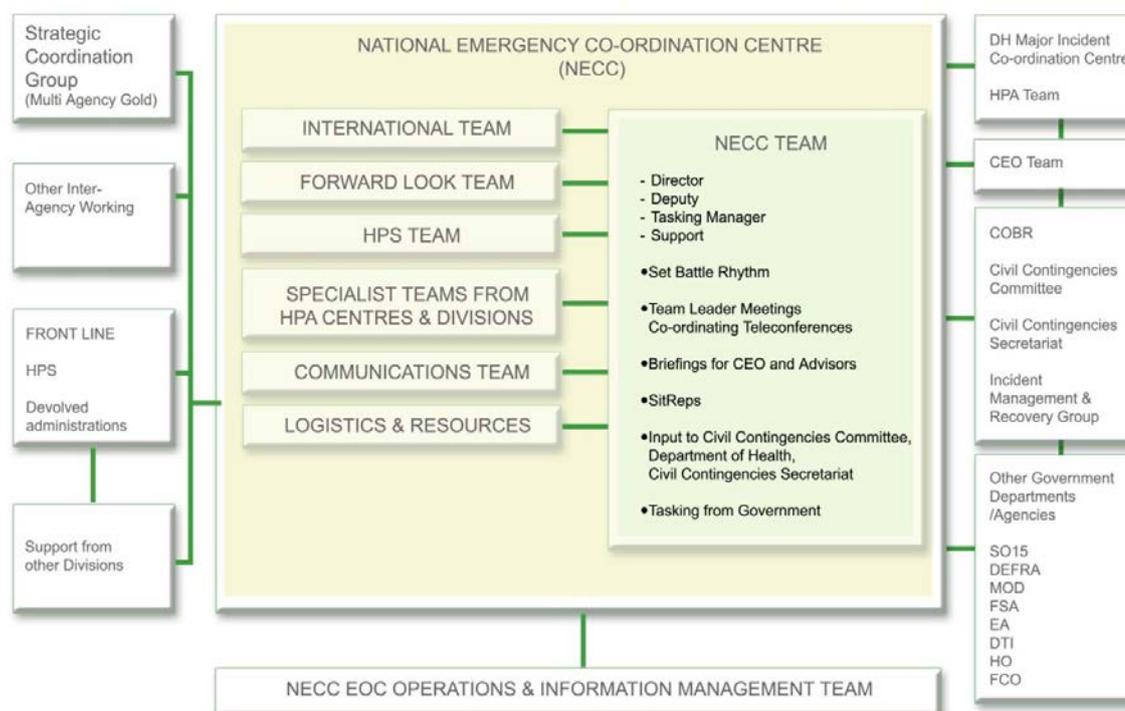
The HPA will provide independent specialist advice and operational support to DH, the NHS, and other organisations whose formal responsibilities include responding to an influenza pandemic. Operational support at local, regional and national levels will be provided to assist the development and implementation of inter-agency planning for pandemic influenza.

The HPA Chief Executive has overall responsibility for ensuring that the HPA has the capability and capacity across its services to respond to an influenza pandemic. It is the Executive Group's responsibility to ensure that the actions within each division are implemented effectively during each response phase.

The Head of the HPA Influenza and other Respiratory Infections Delivery Board takes responsibility on behalf of the CEO and Executive Group to ensure relevant plans are in place for an effective response to pandemic influenza.

The HPA's national response during a pandemic will be delivered through the National Emergency Co-ordination Centre (NECC), as detailed in the *HPA Incident and Emergency Response Plan (IERP)*³. This describes the mechanisms and structures by which a flu pandemic (or other emergency) is managed. This requires a National Incident Director (NID) supported by a Gold Team, comprising of the nominated leads from HPA Divisions closely involved in delivering the response. This would include HPS (local), HPS Colindale, Microbiology Services and Communications. The NECC will also be supported by the Forward Look Group. This group comprises of senior HPA personnel with expertise in key areas. Figure 1 shows how the NECC would be structured in an emergency, including an influenza pandemic.

Figure 1: Structure of roles within the NECC/EOC



2.3 HPA Business Continuity during an influenza pandemic

Business Continuity Management (BCM) is a holistic process that identifies potential threats to an organisation and the impacts to the business operations that those threats, if realised, might cause. It

provides a framework for building organisational resilience with the capability for an effective response that safeguards the interests of key stakeholders, reputation, brand and value-creating activities.⁸

The HPA, during a pandemic, must be able to maintain its critical functions and activities. The technique used to identify these is the Business Impact Analysis, which is universal for all scenarios.

This Plan focuses on pandemic influenza related activities and provides a strategic overview. Within Section 3, critical pandemic business functions for each part of the organisation are listed.

2.4 2.3.1 Business Continuity impact on the Agency

This Plan focuses on pandemic influenza related activities and provides a strategic overview. Section 3 lists the essential influenza functions for each Centre and Division within the Agency. How these are prioritised in the context of an emergency, together with non pandemic activities is the responsibility of each Centre and Division who must maintain updated business continuity plans.

The impact on the Agency's income earning activities should be addressed in local and Agency-wide business continuity and response plans. Appropriate records should be kept and used to support financial management during and after the incident.

2.5 2.3.2 Human aspects

Pandemic influenza can impact staff either directly or indirectly. As a result, the human aspects are a component of the broader business continuity planning considerations. The direct impact is that HPA staff themselves may become infected and are absent from work for a period of time until their infection clears. The indirect impact is that the wider community is affected resulting in reduced services or withdrawal of services for one or more periods throughout the pandemic outbreak. This may necessitate staff being away from work even though they themselves have not been infected. Examples of this situation may be closure of schools and children's nurseries resulting in staff having leave for child care purposes.

2.6 2.3.3 Risk management and mitigation

Alternate working arrangements, such as staff redeployment or reassignment of activities to alternate locations, can reduce the impact on critical activities. However, these actions may themselves cause disruption, especially if staff are requested to work away from their usual place of work. To enhance the planning of actions involving the availability and redeployment of staff, HR will monitor and record absenteeism as a result of pandemic infection. This will facilitate trend analysis within the HPA, to identify 'hot spots' where staffing levels have the potential to fall below that at which 'mission critical activities' can continue to be fulfilled.

Individual plans of HPA centres and divisions must address the availability of technology, systems, access rights and remote access capability/capacity. These need to remain flexible in accordance with a changing situation.

High staff attrition rates may require staff to be multi-skilled where relevant, in order to support any required back-filling of roles. Plans will identify alternatives for key senior staff.

This should be addressed through cross-training and succession planning, as part of good management practice as a 'business as usual' activity. Job sharing or sharing of responsibilities where mixed skills are required may also be important.

Whilst the HPA can implement its own plans to manage continuity of business, the HPA is also dependent on its end-to-end supply chain management for both outsourced services and internal processes. In preparation for a pandemic event, the robustness of suppliers' (internal and external) business continuity

plans should be verified to provide the necessary assurance that the HPA has the ability to deliver on behalf of its stakeholders.

3 HPA Operational Response Arrangements during Pandemic Influenza

3.1 The Chief Executive (CEO)

The CEO will provide leadership and strategic coordination to the HPA's response to a pandemic. The CEO will move the HPA through UK response phases during a pandemic. Strategic coordination of the HPA-wide response will be provided by the CEO in conjunction with the Gold Group Incident Response Coordination Team (IRCT).

Phase	Action	Responsible
Detection	Monitor and coordinate Agency responses to international requests for briefings and expertise on pandemic influenza in conjunction with relevant centres and divisions	CEO/Respiratory Infections Programme Director/DPHS
	Review and update briefing requirements of COBR and other government departments	CEO/ Executive Director for Emergency Response
	Review experience to date in dealing with the resource demands within HPA and the profile of experience from countries that have suffered / are suffering the pandemic and refine strategy	CEO/ NECC
	Work with government to ensure that appropriate data and advice is supplied and to act as the conduit for downward tasking	CEO/ NECC
Assessment	Activate IERP and NECC (if not already activated)	CEO/ Deputy
	Establish a daily 'battle rhythm' for meetings and information flows to meet HPA and government needs	Gold IRCT Lead
	Review experience to date in dealing with the resource demands within HPA and the profile of experience from countries that have suffered / are suffering the pandemic and refine strategy	CEO/ NECC
	Work with government to ensure that appropriate data and advice is supplied and to act as the conduit for downward tasking	CEO/ NECC
	Reconvene the NECC in accordance with IERP triggers	CEO
	Assessment of overall health impact of pandemic	CEO
Treatment	Participate in WHO, ECDC and CNRL-led discussions and activities.	Director of HPS/ Executive Director of Emergency Response
	Review and update briefing requirements of COBR and other government departments	CEO/ Executive Director for Emergency Response
	Activate IERP and NECC (if not already activated)	CEO/ Deputy
	Establish a daily 'battle rhythm' for meetings and information flows to meet HPA and government needs	Gold IRCT Lead
	Review experience to date in dealing with the resource demands within HPA and the profile of experience from countries that have suffered / are suffering the pandemic and refine strategy	CEO/ NECC
	Work with Government to ensure that appropriate data and	CEO/ NECC

	advice is supplied and to act as the conduit for downward tasking	
	Reconvene the NECC in accordance with IERP triggers	CEO
Escalation	Consider the need to establish Gold IRCT to assess potential impact of heightened alert state on HPA business continuity and resource options to deliver plan	CEO/ HR Director
	Prepare to divert IT resources to ensure that all systems are prioritised to support pandemic influenza response	Head of Information Systems
	Implement pandemic influenza command and control arrangements	CEO/ Executive Director for Emergency Response
	Review and update briefing requirements of COBR and other government departments	CEO/ Executive Director for Emergency Response
	Activate IERP and NECC (if not already activated)	CEO/ Deputy
	Establish a daily 'battle rhythm' for meetings and information flows to meet HPA and government needs	Gold IRCT Lead
	Review experience to date in dealing with the resource demands within HPA and the profile of experience from countries that have suffered / are suffering the pandemic and refine strategy	CEO/ NECC
	Work with government to ensure that appropriate data and advice is supplied and to act as the conduit for downward tasking	CEO/ NECC
	Reconvene the NECC in accordance with IERP triggers	CEO
	Establish Gold Group IRCT (if not already done) to assess potential impact of pandemic on HPA business continuity and resource options	CEO/ Executive Director for Emergency Response
	Consider the need to activate NECC	Gold IRCT Lead
	Establish daily 'battle rhythm'	CEO/ Executive Director for Emergency Response
	Establish routine for briefing Cabinet Office Briefing Room (COBR) and other government departments	CEO/ Executive Director for Emergency Response
	Plan HPA input into DH and Cabinet Office and allocate these roles	CEO/ Executive Director for Emergency Response
	Set up a liaison cell at DH Major Incident Coordination Centre (MICC) discussions and activities	CEO/ Executive Director for Emergency Response
	Implement mechanisms for re-deployment of staff from 'non-influenza' areas	CEO/ HR Director/Divisional Directors
	Consider implication of and repercussions of cancellation of all annual leave	CEO/ HR Director
	Participate in WHO, ECDC and CNRL-led discussions and activities.	Director of HPS/ Executive Director for Emergency

		Response
Recovery	Review and update briefing requirements of COBR and other government departments	CEO/ Executive Director for Emergency Response
	Review experience to date in dealing with the resource demands within HPA and the profile of experience from countries that have suffered / are suffering the pandemic and refine strategy	CEO/ NECC
	Review actions taken and adapt existing plans in the light of lessons learned	CEO/Respiratory Infections Programme Director/ DPHS/ Executive Director for Emergency Response
	Review international liaison and identify lessons learned	DPHS/ Executive Director for Emergency Response
	Take stock of the pandemic's impact on the HPA and implement actions to return HPA to business as usual	CEO
	Assessment of overall health impact of pandemic	CEO
	Support re-activation of Agency international activities which had been affected by the pandemic	CEO/DPHS

3.2 Public Health Strategy

The Public Health Strategy Division (PHSD) holds a wide portfolio of strategic work including: International Office and Global Health, clinical and health protection governance, Healthcare Associated Infections and Antimicrobial Resistance Stewardship (HCAI & AMRS) Programme, Research and Development, specialist learning and professional development, Field Epidemiology Training Programme (FETP), HPA funded public health, medical microbiology and toxicology specialist trainees, climate change and health protection/extreme events, HPA Caldicott Guardian and Medical Director responsibilities.

Throughout the pandemic PHSD will provide support to the CEO in the leadership and strategic coordination of HPA's response to a pandemic.

The Director of Public Health Strategy (DPHS) /Medical Director (MD) will act as a deputy when required, and will provide Executive Director advice to the CEO on matters of public health and clinical governance. The DPHS/MD senior team will provide further support in this regard.

The division will be able to provide public health consultant staff support for the National Emergency Co-ordination Centre (NECC), the Gold team and the Pandemic Influenza Strategic Group as appropriate; scientific and other staff in PHSD will be deployed as appropriate and helpful.

Throughout the pandemic phases the International Office will contribute to relevant international communications and arrangements.

The HCAI & AMRS Programme will provide support to the Respiratory Infections Programme in relation to issues around infection prevention and control, healthcare epidemiology and reference microbiology matters.

Phase	Action	Responsible
Detection	Executive Director and Medical Director advice to the CEO on matters of public health and clinical governance	Director Public Health Strategy/Medical Director
	Contribute to the monitoring and coordination of agency responses to international requests for agency briefings and expertise on pandemic influenza in conjunction with relevant centres and divisions	Director Public Health Strategy/ International Office
Assessment	Executive Director and Medical Director advice to the CEO on matters of public health and clinical governance	Director Public Health Strategy/Medical Director
Treatment		
Escalation		
Recovery	Executive Director and Medical Director advice to the CEO on matters of public health and clinical governance	Director Public Health Strategy/Medical Director
	Support the review of actions taken and adapt existing plans in the light of lessons learned	Director Public Health Strategy/Medical Director / Consultant Public Health Strategy (Clinical Governance)
	Review international liaison and identify lessons learned	Director Public Health Strategy/ International

		Office
	Support re-activation of agency international activities which had been affected by the pandemic	Director Public Health Strategy/ International Office

3.3 Microbiology Services - Specialist Microbiology Network

Laboratories within the Specialist Microbiology Network (SMN) will lead the laboratory testing of samples for the diagnosis of influenza, primarily using nucleic acid based amplification technology and generating information on influenza type and subtype. SMN laboratories will test respiratory samples for a range of other common respiratory viruses whenever feasible.

Phase	Action	Responsible
Detection	Provide timely diagnosis of infection with the pandemic influenza virus strain, and test for a range of other respiratory viruses whenever feasible	Deputy Director SMN
	Develop specific laboratory testing for diagnosis of influenza virus infection and antiviral resistance in collaboration with the HPA respiratory virus unit reference services	Deputy Director SMN
	Contribute to the development of expert guidance	Influenza Lead SMN
	Develop a surge capacity plan	Deputy Director MS Operations
	Support and facilitate the laboratory diagnosis of pandemic influenza virus infection by NHS laboratories	Deputy Director SMN
	Provide data on test results to other HPA divisions and units	Deputy Director SMN
Assessment	As for detection phase	
	Provision of data for any enhanced surveillance schemes	Deputy Director SMN
	Contribute to the review of expert guidance, including that covering hospital infection control	Influenza Lead SMN
Treatment	As for detection and assessment phases	
Escalation	Implement surge capacity plan driven by specific characteristics of the pandemic	Deputy Director SMN
Recovery	Re-introduction of normal laboratory operations and rescheduling of work delayed by the impact of pandemic influenza	Deputy Director SMN
	Generate and contribute towards the review of lessons	Influenza Lead SMN

	learned	
	Review testing capability in preparation for the next influenza season	Influenza Lead SMN

3.4 Microbiology Services - Reference Laboratory (Respiratory Virus Unit), Colindale

The reference laboratory at MS Colindale is responsible for detection and surveillance of respiratory viruses including influenza viruses. At an early stage of an influenza pandemic, the key roles of the Reference Laboratory are to develop diagnostic assays for specific detection of the novel pandemic virus, diagnosis and confirmation of pandemic virus infections in the first UK cases and then to undertake virological surveillance for the new pandemic strain and other circulating influenza viruses. Once developed, roll-out of the pandemic specific diagnostic assay(s), to HPA (and possibly other) laboratories will be implemented. The quality assurance of assay detection will be ensured across the lab testing network through the provision of National Standard Methods developed by the Reference Laboratory, provision of positive control reagents and proficiency testing.

The reference laboratory performs both genotypic and phenotypic characterisation of influenza virus susceptibility to currently available antiviral drugs. In a pandemic, the reference laboratory will be responsible for developing assays specific for identification of both genotypic and phenotypic antiviral resistance in the pandemic virus. In addition, the reference laboratory will provide support for pandemic virus specific antiviral genotypic testing in the network as required.

Isolation of pandemic influenza virus strains from clinical samples in the reference laboratory during a pandemic will provide antigenically characterised virus isolates as candidate pandemic vaccine strains and allow monitoring of antigenic drift in circulating strains compared to the available reference strains. The Reference Laboratory will obtain additional pandemic reference virus(es) through the WHO Global Influenza Surveillance and Response System (GISRS) which, together with UK pandemic viruses, will be used to generate reagents, including ferret antisera, to aid detection and characterisation of the novel virus. Genetic characterisation of circulating pandemic viruses, including development of whole genome sequencing capability, will be performed by the reference laboratory throughout a pandemic to monitor mutations in the viral genome that might affect virulence, transmissibility, antigenicity, antiviral susceptibility, or any other characteristics of the pandemic virus.

Specific serological assays will be developed for the pandemic virus in order to perform sero-incidence and sero-prevalence studies. The reference laboratory will also provide support to vaccine trials.

At all phases, the reference laboratory will liaise with HPS Colindale, national and international bodies, and will provide timely and accurate virological information.

Phase	Action	Responsible
Detection	Detection and confirmation in the reference laboratory and the development of laboratory diagnostic tests specific for the pandemic virus	Head of reference laboratory
	Confirm all suspected cases in UK and report collated UK case numbers both nationally and internationally.	Head of reference laboratory
	Roll out validated diagnostic tests for novel influenza subtype	Reference laboratory & Specialist Microbiology

		Network
	Ensure quality assurance of testing in virology laboratories	Reference laboratory & Specialist Microbiology Network & NIBSC
	Antiviral testing/confirmation and development of antiviral susceptibility assays specific for the pandemic virus	Head of reference laboratory
	Liaise with WHO to obtain pandemic reference strains	Head of reference laboratory
Assessment	Continue to detect the virus	Reference laboratory & Specialist Microbiology Network
	Undertake national virological surveillance schemes (e.g. NHSD self testing, RCGP, FF100 etc)	Head of reference laboratory
	Characterise strains of influenza virus isolated in the UK to assess antigenic drift, genetic mutations and antiviral susceptibility	Head of reference laboratory
	Support accelerated vaccine development including efficacy and safety data, and culture of candidate vaccine strains	Head of reference laboratory
	Liaise with national and international organisations, such as VLA ,ECDC, WHO, Serology test development	Head of reference laboratory
Treatment	Undertake sero-incidence testing	Head of reference laboratory
	Continue to characterise viral isolates in order to detect any changes that may affect virulence, antiviral resistance, transmission or any other characteristic	Head of reference laboratory
	Provide support for pandemic virus specific genotypic screening for antiviral susceptibility in the Specialist Microbiology Network as required	Reference Laboratory & Specialist Microbiology Network
Escalation	Continue to monitor the characteristics of the virus, including antigenic characterisation, whole genome sequencing and antiviral susceptibility testing	Head of reference laboratory
Recovery	Continue to monitor the virus and susceptibility in the population	Head of reference laboratory

	Update Algorithms, Pandemic Preparedness Plans, Business Continuity Plans as required	Head of reference laboratory
	Issue regular communication to internal / external stakeholders	Head of reference laboratory
	Review response activities and identify lessons learned for possible and subsequent waves / other wide-scale emergencies	Head of reference laboratory
	Continue to produce and/or contribute to status reports as needed	Head of reference laboratory

3.5 Health Protection Services, Colindale

Health Protection Services (HPS), Colindale is responsible for coordinating the gathering and assessment of intelligence (nationally and internationally) on any new pandemic strain; coordinating the collection and analysis of epidemiological and clinical data on the early cases and throughout the pandemic; developing and coordinating guidance in relation to the investigation and management of cases, clusters and outbreaks (including infection control measures); monitoring the spread of the pandemic and using this data, in conjunction with modellers, to undertake risk assessments on the size of the likely impact on the UK; undertaking surveillance within the community to inform public health and pharmaceutical countermeasures; monitoring hospitalised cases and deaths in order to derive estimates of severity; providing information and guidance to healthcare professionals and the general public; undertaking vaccine efficacy studies; in conjunction with colleagues in Microbiology Services, undertake sero-epidemiological studies and provide data, expert advice and support to the Department of Health, the CMO, COBR and SAGE.

At an early stage of an influenza pandemic, the key roles of HPS Colindale will be focussed on assessing intelligence (nationally and internationally) on any new pandemic strain and collecting as much virological, epidemiological and clinical data on the first few cases and their contacts as possible, in order to assess the likely impact in the UK, develop guidance on the management of cases and clusters and develop infection control guidance. As the pandemic progresses the emphasis will be on monitoring trends and working with modellers to assess the likely impact of the pandemic and to determine when the pandemic has peaked. The provision of information to healthcare workers and the public will be an important aspect of communications throughout. The provision of data, expert advice and support to DH, the CMO, COBR and SAGE will be an important function for HPS, Colindale throughout any pandemic. At all phases, HPS Colindale will liaise with national and international bodies, and will provide timely and accurate epidemiological information.

Phase	Action	Responsible
Detection	Activate the EOC	Director HPS Colindale
	Gather, assess and verify intelligence from countries already	Head of Respiratory

	affected	Diseases Dept
	Using international data attempt to provide an initial assessment of the likely severity and impact on the UK	Head of Respiratory Diseases Dept
	Identify and undertake rapid public health investigations necessary to address important gaps in evidence required to inform containment and treatment	Director HPS Colindale/ Head of Respiratory Diseases Dept
	Work with data management team in the NECC to ensure investigation protocols and databases (including FF100, community, hospital and sero-epidemiology systems) are current, ready to go and reflect intelligence gathered from countries already affected	Head of Respiratory Diseases Dept/Modelling and Statistics unit/Data Management team
	Lead and coordinate the development of early expert guidance around the management of patients and outbreaks ; including advice on infection control and use of antivirals	Head of Respiratory Diseases Dept
	Liaise with Occupational Health to develop information/ guidance for staff and ensure there is a direct communication link to ensure there is consistency of advice to staff and that is appropriate for their particular needs	Head of Respiratory Diseases Dept/Head of Occupational Health
	Provide expert input to the development of information to health professionals and the public	Head of Respiratory Diseases Dept
	Provide intelligence and expert advice to the CMO and SAGE as required	Head of Respiratory Diseases Dept
	Refine vaccine efficacy and safety protocols	Head of Immunisation Dept
	In conjunction with HPS (local) agree advice and information on port health and travel issues	Head of Respiratory Diseases Dept
	Contribute to international collaborations and assessments	Director HPS Colindale/ Head of Respiratory Diseases Dept
	Refine surge capacity plan	Director HPS Colindale
Assessment	Continue to gather and evaluate intelligence from countries already affected	Head of Respiratory Diseases Dept
	Identify key clinical and epidemiological features of the new pandemic virus in collaboration with MS and HPS (Local) using the FF100, community, and hospital based systems	Head of Respiratory Diseases Dept
	Provide early estimates of the likely severity and impact on the UK using data from the FF100 and data from other countries	Head of Respiratory Diseases Dept/Modelling and statistics unit
	Using enhanced surveillance data attempt to model the likely	Modelling and statistics unit

	course of the pandemic	
	Provide data from the enhanced surveillance schemes	Head of Respiratory Diseases Dept
	Activate the daily mortality data streams with GRO	Director HPS Colindale/ Head of Respiratory Diseases Dept
	Look for evidence of sustained community transmission in conjunction with HPS Local	Head of Respiratory Diseases Dept
	Assess the need for public health interventions such as school closures	Head of Respiratory Diseases Dept/Modelling and Statistics Unit
	Develop public health guidance on the potential use of antivirals for treatment and prophylaxis	Head of Respiratory Diseases Dept
	Carry out vaccine safety trails and efficacy studies	Head of Immunisation Dept Head of Respiratory Diseases Dept
	Lead and coordinate the review of expert guidance, including that covering hospital infection control and communicate the national infection control guidelines and case management algorithms to local partners	Head of Respiratory Diseases Dept
	Provide expert input to the development of information to health professionals and the public	Head of Respiratory Diseases Dept
	Provide intelligence and expert advice to the CMO and SAGE as required.	Head of Respiratory Diseases Dept
Treatment	As for detection and assessment phases	
	Reassess antiviral strategies and public health interventions	Head of Respiratory Diseases Dept
	Collect aggregate data and produce information on trends	Head of Respiratory Diseases Dept
	Monitor deaths and excess mortality	Head of Respiratory Diseases Dept
	Depending on the development of the pandemic, prepare for evaluation of targeted vaccination programmes as vaccine becomes available.	Head of Immunisation Dept Head of Respiratory Diseases Dept
Escalation	Implement surge capacity plan driven by specific characteristics of the pandemic.	Director HPS Colindale

	Reassess antiviral strategies and public health interventions	Head of Respiratory Diseases Dept
	Assess the need for ongoing surveillance and identify minimum requirements	Head of Respiratory Diseases Dept
	Continue to monitor deaths and excess mortality	Head of Respiratory Diseases Dept
	Lead and coordinate the review of expert guidance, including that covering hospital infection control	Head of Respiratory Diseases Dept
	Provide expert input to the development of information to health professionals and the public	Head of Respiratory Diseases Dept
	Provide intelligence and expert advice to the CMO and SAGE as required.	Head of Respiratory Diseases Dept
Recovery	Re-introduction of normal surveillance and response operations and rescheduling of work delayed by the impact of the pandemic	Head of Respiratory Diseases Dept
	Write up findings from the pandemic	All
	Generate and contribute towards the review of lessons learned	All
	Review guidance on the investigation , management of cases outbreaks etc	Head of Respiratory Diseases Dept
	Review epidemiology and surveillance capability in preparation for the next influenza season	Head of Respiratory Diseases Dept

3.6 Health Protection Services (local)

In England, Health Protection Services (local) will discharge the HPA's responsibilities at local and regional levels by supporting local and regional planning and response arrangements. This will include working with PCTs, NHS Trusts and Local Authorities and Local Resilience Forums (LRF) regarding pandemic preparedness: working closely with professional colleagues in primary care and acute trusts; assisting with coordination of control measures including outbreak investigation and management and use of antivirals and vaccine; as well as/or gathering epidemiological information.

Phase	Action	Responsible
Detection	Develop a coordinated and standardised local response to avian and pandemic influenza across the HPA	HPS pandemic influenza lead/ Regional flu lead
	Ensure frontline HPU staff have access to and are trained in the use of HPZone and other case management influenza databases	HPS Pandemic influenza lead/HPU Directors
	Work with local partners to ensure influenza outbreak detection and response in schools, care homes and other community settings	HPU Directors
	Provide local support and guidance for use of antivirals including any local decisions about thresholds and usage in outbreaks	HPU Directors
	Report all returning traveller and influenza incidents to influenza preparedness section	HPU Directors
	Provide accurate and timely information for the public and health professionals (including reinforcing social distancing messages, good hand and respiratory hygiene)	HPU Directors/Communication managers
	Adapt and roll out guidance on the investigation of possible cases and their contacts, clusters and outbreaks	HPU Directors
	Report possible clusters or outbreaks of influenza-like-illness (ILI) to Health Protection Services, Colindale	HPU Directors
	Support PCTs and NHS Trusts to contact all primary care physicians and emergency departments to ensure surveillance and management guidance is in place	HPU Directors/HPU geographical leads
		Provide updates through locally agreed systems to the NHS and LRFs
Assessment	Use the FF100 systems to rapidly investigate initial pandemic cases, clusters and contacts in order to gain insights into the clinical presentation, epidemiological features including severity and other aspects of the illness	HPU Directors

	associated with the new virus to inform real-time modelling	
	Implement enhanced pandemic influenza surveillance systems including systems to measure community transmission and severe disease	HPU Directors
	Activate relevant Emergency Operations Centre (EOC)	Regional/ HPU Director
	Engage with NHS command structures as they are established	Regional/ HPU Director
Treatment	Communicate the national infection control guidelines and case management algorithms to local partners and support local training needs	HPU Directors/Communication managers
	Maintain surveillance systems of ILI cases and outbreak investigation	Regional Epidemiology Unit
	Undertake community surveillance, sero-incidence surveillance and severe disease (hospital-based) and mortality surveillance	HPU Directors
	Provide timely and accurate information for the public and health professionals on the pandemic and the clinical effects of the infection working within agreed local communications arrangements (depending on establishment of multiagency command structures)	HPU Directors/Communication managers
	Disseminate information on the pandemic, when available, to health professional and local partners working within agreed local communications arrangements (depending on establishment of multiagency command structures)	HPU Directors/Communication managers
	Support the management of cases and clusters or outbreaks of ILI	HPU Directors
	Provide advice to support local decision making about measures to control the spread of the virus	Regional Directors/HPU Directors
	Actively engage with NHS command structures and multiagency response structures, providing specialist health protection advice.	Regional Directors/HPU Directors
	Support and collate local reports of aggregate influenza activity in primary care	HPU Directors/Regional Epidemiologists
Support investigation and response to outbreaks, particularly in settings such as schools, care homes and prisons, and assess the efficacy of control measures	HPU Directors/HPU Teams	

	Activate relevant EOC	Regional/ HPU Director
Escalation	Support PCTs in coordination of vaccination (if supplies are available)	HPU Directors/HPU Immunisation leads
	Assist NHS colleagues in developing framework for delivery of mass vaccination to target groups	HPU Directors/HPU flu leads /HPU Immunisation leads
	Open and maintain HPU and Regional Emergency Operations Centres	Regional and HPU Directors /Emergency Planning Managers
	Coordinate specialist health protection advice to NHS command structures and to multiagency command structures. Coordinate support to the NHS and other agencies through these structures.	Regional Directors/HPU Directors
	Support to the NHS in the implementation of the immunisation programme	HPU Directors/ Immunisation leads
Recovery	Carry out internal debrief to contribute to the overall HPA debrief (by the end of 1 st wave)	Regional Director
	Review response activities and identify lessons learned for possible and subsequent waves/ other wide scale emergencies	Regional Directors/Regional Health Emergency Planning Advisers
	Contribute to the update of algorithms, pandemic preparedness plans, business continuity plans as required	Regional Directors/ HPU Directors/Regional Health Emergency planning advisers
	Review effectiveness of pandemic preparedness plan and business continuity activities	Regional Directors/Regional Health Emergency Planning Advisers
	Issue regular communications to internal and external stakeholders	Regional Director/Regional Communication manager
	Maintain regional surveillance mechanisms for evidence of resurgence in activity during 2 nd wave	Regional Epidemiologists
	Evaluate the impact of the pandemic, identify lessons learned and disseminate new scientific learning through appropriate channels	Regional Directors

3.7 HPS Emergency Response Division (ERD), and HPA Porton

HPS, Emergency Response Division (ERD) in conjunction with their Corporate Resilience Team (Victoria based) will maintain a pool of staff trained and ready for deployment to support other parts of the HPA where necessary in emergency response activity. The division will also maintain in readiness the capability to open an alternative EOC/NECC (outside Victoria) in the event of either: a second emergency running concurrently or the initial NECC location being compromised (agency resilience).

HPA Porton will:

Work with National Institute of Biological Standards and Control (NIBSC) towards candidate vaccine development and standardisation, if requested by DH, and supported by appropriate funding

Work with industry in diagnostics, screening and efficacy testing

Make available its containment laboratories and expertise in microbiological services, in support of the plan.

Potentially store and distribute the stockpile of HPA anti-virals.

Phase	Action	Responsible
Detection	Liaise with NIBSC & DH over vaccine development plans	Deputy Director, Research
	Consider need to activate HPA Porton pandemic flu plan	Director, HPA Porton
	Provide surge capacity for novel influenza subtype diagnostics development	Deputy Director, Research
	Review arrangement for the deployment of relief staff to HPA Colindale, Regional Microbiology Laboratories and HPS	Deputy Director, Research
Assessment	Review arrangements to provide surge capacity for novel influenza virus diagnostics	Deputy Director, Research
	Consider establishing a forward look group to identify potential future threats and risks	Director, HPA Porton
Treatment	Open EOC	Head of Site Operations
	Collaborate with DH, Industry and others to support rapid development of new vaccine(s)	Deputy Director, Research
Escalation	Provide surge capacity for novel influenza subtype diagnostics	Deputy Director, Research
	Deploy relief staff as required	Director, HPA Porton

	Open EOC	Head of Site Operations
Recovery	Continue to review site resilience arrangements and maintain capability	Director, HPA Porton
	Review response activities and lessons identified and put in place an action plan to mitigate these for possible and subsequent waves/other wide-scale emergencies	Director, HPA Porton
	Review effectiveness of pandemic preparedness plan and business continuity activities	Director, HPA Porton
	Continue to produce and/or contribute to status reports as required	Director, HPA Porton
	Issue regular communications to internal/external stakeholders	Director, HPA Porton

3.8 National Institute of Biological Standards and Control (NIBSC)

NIBSC's general remit is to support the development and use of biological medicines through standardisation (development of bioassays and reference materials to calibrate those tests) and control (testing of products against their specifications to ensure that they are fit for purpose).

NIBSC will:

Continue to perform batch release of essential biological medicines and vaccines

Closely monitor the antigenic and genetic evolution of the pandemic influenza virus, in collaboration and interaction with the WHO Global Influenza Surveillance and Response System (GISRS)

Liaise with GISRS laboratories and HPS Colindale in order to obtain as quickly as possible pandemic virus isolates

Generate candidate vaccine virus(es) by conventional reassortment and/or reverse genetics, as appropriate; will perform all necessary safety tests on the candidate vaccine viruses, or arrange their execution at collaborating laboratories

Generate a polyclonal sheep antiserum against the pandemic virus for use in vaccine potency determination; will liaise with influenza vaccine manufacturers to obtain antigen suitable for filling and freeze-drying

Prepare and calibrate a reference antigen reagent using manufacturers' bulk virus preparations

Collaborate with international laboratories in the calibration of other reference reagents

Perform batch release of pandemic vaccines

Phase	Action	Responsible
Detection	Ensure facilities, reagents, supplies (including animals) and protocols required for the generation of candidate vaccine viruses, by conventional reassortment or reverse genetics, are available and fit-for-purpose	Influenza group, HoD, Director
	Maintain and, if necessary, intensify interactions with WHO, ECDC, EMA, IFPMA and other international stakeholders in relation to pandemic activities	Influenza group, HoD, Director
	Maintain accreditation and competency in the batch release of influenza vaccines and, if necessary, review arrangements for surge capacity	Influenza group, Study Director influenza batch release, HoD
	Develop and continuously update a list of essential vaccines and biological medicines, the supply and batch release of	HoDs, Director

	which must be guaranteed during a pandemic	
	Obtain virus(es) of concern (potentially pandemic or newly emerging virus) as quickly as possible	Influenza group
Assessment	Closely liaise with international partners (e.g. WHO GISRS, ECDC) regarding influenza risk assessment and contribute to this work	Influenza group, HoD, Director
	Develop candidate vaccine viruses by conventional reassortment and/or reverse genetics, as appropriate	Influenza group
	Assess newly developed candidate vaccine viruses (safety testing, yield studies) and share data with international partners	Influenza group
	Initiate production of reference reagents (sheep antiserum and reference antigen) for the potency testing of inactivated influenza vaccines	Influenza group
Treatment	Continue and, if necessary, intensify interaction with partners and stakeholders (e.g. WHO, ECDC, EMA, IFPMA)	Influenza group, HoD, Director
	Continue activities related to the production of reference reagents and the potency testing of influenza vaccines, or initiate these activities if not done so earlier	Influenza group, HoD, Director
	Monitor use and usefulness of existing candidate vaccine viruses and, if necessary, generate new/improved ones	Influenza group
Escalation	Continue and, if necessary, intensify activities from previous phases	Influenza group, HoD, Director
	Continue or initiate (as vaccine becomes available) batch release of pandemic influenza vaccines and ensure rapid turn around	Influenza group, Study Director influenza batch release
	Continue and, if necessary, intensify interaction with partners and stakeholders (e.g. WHO, ECDC, EMA, IFPMA)	Influenza group, HoD, Director
	Continue monitoring use and usefulness of existing candidate vaccine viruses and, if necessary, generate new/improved ones	Influenza group
Recovery	Continue batch release of pandemic vaccines as required	Influenza group, Study Director influenza batch release
	Review actions taken and adapt existing plans in the light of lessons learned	Influenza group, HoD, Director

	Revert to seasonal influenza activities as appropriate	Influenza group
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3.9 HPA Communications Division

The Communications Division works as a single cohesive unit, providing mutual support as required to deliver an effective response at all stages of a pandemic. The communications director with support from the national press office at Colindale would lead the agency’s response, with support from communications colleagues across the division as necessary. Depending on the local or national situation, for example if a regional hotspot occurs or there is particular pressure from the media for information, resources will be mobilised from across the division to assist in that region. The Communications Division operates round-the-clock on call systems 24/7 365 days a year. During a pandemic situation, rotas for increasing communications staff cover both in and out of office hours would be introduced if necessary, using colleagues from across the division for support.

Phase	Action	Responsible
Planning	Provide input to DH communications materials and planning process as required	Communications Division
	Develop internal key message documents, Q&As, templates for statements and press releases. These to be shared with colleagues in DH as appropriate.	
	Develop and agree national and regional communications strategy and media handling plan with DH including media handling protocol	
	Identify national and regional spokespeople and ensure media training is delivered	
	Prepare templates and sleeping pages for HPA website and HPAnet	
Detection	Ensure that regions and HPU are kept up to date with key messages and Q&As	Communications Division
	Check and update if necessary Divisional BCP	
	Prepare a staff rota to ensure resilience	
	Link with communications colleagues in ECDC and WHO to ensure early alerting of public health messages and international media approaches are in place	
	Monitor traditional and social media for new angles	
	Communicate any necessary messages with media, including social	
	Make pandemic web pages live with current public health Information	
Assessment	Handle requests for information from the media	Communications Division

	<p>Provide advice on release of early information</p> <p>Agree timings of announcements with DH and DA comms colleagues</p> <p>Daily teleconferences to be established to update colleagues on the situation</p> <p>Ensure national and regional spokespeople are kept up to date on latest information</p> <p>Facilitate media interviews and provide support to spokespeople</p> <p>Make use of Twitter and Facebook accounts to promulgate public health messaging</p> <p>Monitor traditional and social media for new angles and rumour busting</p>	
Treatment	<p>Media handling of national and regional requests for information/expert spokespeople</p> <p>Daily teleconferences to be used to update colleagues on the situation</p> <p>Ensure accurate and updated patient figures are cascaded to regional colleagues and work with the NHS to ensure release of consistent messages and that daily statement timings coincide.</p> <p>Take part in daily CMO briefings and brief and provide expert spokespeople as required by DH</p> <p>Review national coverage daily and liaise with DH on handling of issues as they emerge</p> <p>Horizon scan traditional and social media to prepare for new news angles and to rebut any misinformation</p> <p>Keep website updated with statements, Q&As and use Twitter feed to promote this</p>	Communications Division
Escalation	<p>Work with DH and DA comms colleagues to provide any new or revised public health advice</p> <p>Media handling of national and regional requests for information/experts</p> <p>Daily teleconferences to be used to update colleagues on the situation</p> <p>Ensure accurate and updated national figures to be available to regional colleagues through the weekly report, unless</p>	Communications Division

	<p>reporting schedule is made more frequent.</p> <p>Take part in daily/weekly CMO briefings and brief and provide expert spokespeople as required by DH</p> <p>Review national coverage daily and liaise with DH on handling of issues as they emerge</p> <p>Horizon scan traditional and social media to prepare for new news angles and to rebut any misinformation</p> <p>Keep website updated with statements, Q&As and use Twitter feed to promote this</p>	
<p>Recovery</p>	<p>Review media coverage</p> <p>Evaluate and identify any lessons from the response for implementation in refined communications strategy</p> <p>Work with DH and DA colleagues to prepare any new information/guidance based on latest information available from HPA experts</p> <p>Evaluate the impact of the pandemic in terms of public perception of risk, infection control and public health issues</p> <p>Issue a summary press release when the pandemic is declared officially over</p>	<p>Communications Division</p>

3.10 Centre for Radiation, Chemicals and Environmental Hazards (CRCE)

The provision of any CRCE resources to support the HPA’s overall response is subject to the availability of those resources which may be committed to the response to a radiation or chemical incident. All actions listed below are therefore subject to the afore mentioned caveat. CRCE must also maintain its ability to provide a response to chemical and radiological emergencies which may arise during the period of response.

In addition to staffing the FF100 team at CRCE Chilton, CRCE would contribute to the HPA’s overall response to a flu pandemic by providing generic support to response coordination roles.

Phase	Action	Responsible
Detection	Identify staff available to provide support to other parts of the HPA and deploy as appropriate. Carry out impact assessment on CRCE business operations at current time.	Director of CRCE
Assessment	Open and operate the CRCE Emergency Operations Centre (EOC) to coordinate CRCE Response activities	Director of CRCE
	Provide additional support to other parts of the HPA as necessary	
	Establish FF100 team at CRCE Chilton	
Treatment	Provide additional support to other parts of the HPA as necessary, stopping other non-essential work to allow additional staff to be made available	Director of CRCE
Escalation	Re-evaluate impact assessment on CRCE response capabilities for chemical and radiological emergencies. Continue to support where possible the wider HPA response	Director of CRCE
Recovery	Gradual reduction in CRCE staffing in support of the Pandemic response	Director of CRCE
	Evaluation of impact on business as a result of supporting the response	
	Prioritised re-commencement of normal work.	

3.11 Corporate Services

3.11.1 Human Resources Division (HR)

Human Resources has a vital role in ensuring the Agency has preventative measures in place to reduce the impact of a Pandemic and will plan to ensure key functions can continue to be carried out should the workforce be affected.

HR key roles:

To support managers in the creation of a business continuity/disaster recovery plan in order to identify and source key skills to sustain vital functions

Coordinating with other areas to plan operations during a time of reduced workforce

Ensure policies are maintained/ developed and activated when required. Once formalised and tested, HR will then be responsible for communicating the policies and procedures to workers, and arranging training as necessary

Phase	Action	Responsible
Detection	Finalise mapping of the workforce including liaison with ERD re skills training database HR	Director/ HR Management Team
	Ensure departments have up to date workforce information on staff contact details, travel to work and dependants.	Director/ HR Management Team
	Continue to work with ERD and the skills database to ensure competency assessment in teams.	Director/ HR Management Team
	Review existing guidance on terms and conditions and related issues that apply to employees involved in emergency operations	Director/ HR Management Team
	Finalise relevant pandemic flu information for staff and a staff communication plan with Comms	Director/ HR Management Team
	Start to formulate redeployment options with the relevant department managers	Director/ HR Management Team
	Ensure administration and support arrangements are in place so that relief staff can be deployed seamlessly from CEPR and CRCE to support pandemic response functions in different HPA centres	HR Director
	Identify mechanisms for re-deployment of staff from 'non-influenza' areas and prepare staff for imminent deployment	HR Director

	Consider implications and repercussions of cancelling all annual leave.	Director/ HR Management Team
Assessment	Consider sharing staff between other category one responders including the NHS	HR Director/ HR Management Team
	Review lists of bank and part-time staff available	Director/ HR Management Team
	Identify mechanisms for supporting staff required to work extended hours	Director/ HR Management Team
	Consider contacting relevant OGC registered agencies to ensure a pool of agency staff could be available if required	Director/ HR Management Team
	Ensure logistical arrangements are in place for overnight housing of staff temporarily required to mount a 24/7 response	Director/ HR Management Team
	Contact other current/ retired public health practitioners as required and if appropriate	Director/ HR Management Team
	Ensure sound business continuity plans are in place with any outsourced HR providers e.g. Payroll	Director/ HR Management Team
	Liaise with Occupational Health (OH) to ensure advice is available for reducing infections at work	Director/ HR Management Team
Treatment	Activate a staffing cell based in HR to support with redeployment of staff across the agency and the rotas for the various EOC's/NECC.	HR Director/ HR Management Team
	Ensure the up to date terms and conditions applicable during a declared 'emergency' are available on the intranet.	HR Director/ HR Management Team
	Analyse workforce availability across the agency including a continuous review of absence	HR Director/ HR Management Team
	Develop OH advice for staff to assist with dealing with the 'worried well'	HR Director/ HR Management Team
	Review and carry out disciplinary issues and the	HR Director/ HR

	management of poor performance only where necessary	Management Team
	Assist managers in the monitoring of European Working Time Directive rules	HR Director/ HR Management Team
	Liaise with Health and Safety to ensure staff welfare is considered.	HR Director/ HR Management Team
	Provide advice and staff support as appropriate	HR Director/ HR Management Team
	Ensure that remote access to Electronic Staff Records System (ESR) is available for key HR staff.	HR Director/ HR Management Team
Escalation	Consider the implementation of an opt-out clause of the European Working Time Directive	HR Director/ HR Management Team
	Ensure mechanisms are in place for contact with absentees	HR Director/ HR Management Team
	Consider suspension of the sickness absence triggers	HR Director/ HR Management Team
	Work with OH to ensure advice is readily available for all staff on possible symptoms	HR Director/ HR Management Team
	Support managers regarding any absence of staff following bereavement and death in service payments if necessary	HR Director/ HR Management Team
	Consider certification levels for occupational sick pay	HR Director/ HR Management Team
	Support managers with staff working patterns	HR Director/ HR Management

		Team
	Support managers with business continuity arrangements	HR Director/ HR Management Team
	Ensure adequate down time and recovery for affected HPA staff	HR Director
Recovery	Available OH advice will be paramount after the event including counselling support and advice regarding stress in the workplace	HR Director/ HR Management Team
	Assist managers with organisational recovery and recognition	HR Director/ HR Management Team
	Ensure there is a formal way of recognising staff commitment during the pandemic	HR Director/ HR Management Team
	Deal with any deferred organisational development matters such as appraisal and induction	HR Director/ HR Management Team
	Allow staff the necessary time to recover from the pandemic through the use of annual leave, time off in lieu or special leave	HR Director/ HR Management Team
	Rescind any European Working Time Directive waivers, and revert to usual working terms and conditions of employment	HR Director/ HR Management Team
	Engage with staff regarding the pandemic and run workshops/after action reviews regarding lessons learnt	HR Director/ HR Management Team

3.11.2 Finance and Resources Division (FReD)

In a pandemic scenario, front-line staff will need to be supported by the Corporate Services Divisions. The Head of the Divisional Office, or other nominee determined by the Director of Finance and Resources, acts as the Divisional Resource Co-ordinator in an emergency response situation and will act as the prime point of contact for Finance and Resources Division staff redeployment, for example to EOCs or to support other functions.

Much of the work for the Finance and Resources Division occurs in the planning phase. The new DH definitions for activities start with the detection phase, which assumes all the planning work is already in place. For completeness, the planning activities are shown below in a separate table.

The Finance and Resources Division will support the HPA's front-line staff both directly and indirectly. The direct support will include accommodation arrangements, including IT systems in the EOCs and in simplified procurement and cash capabilities. The indirect support will include, inter alia, staff cover for non-critical roles, admin support, communication to board members and rearrangement of meetings and IT resilience and support for critical reporting systems.

Planning Activity	Responsible
Maintain list of essential staff and staff who can be redeployed	Senior Management Team
Make staff available to attend appropriate EOC training	Senior Management Team
Raise awareness of reporting needs	Head of Finance
Maintain generic procurement framework contracts (for example for hotels)	Head of Finance
Develop and publish procurement procedures for incidents	Head of Finance
Have file structures, email accounts etc on standby for EOCs	Head of Information Services
Engage with emergency planning to ensure EOC staff are actively trained in using EOC IT equipment e.g. smart boards	Head of Information Services
Ensure Business Continuity Plans are up to date across the Division	Head of Divisional Office
Maintain contact lists for SMT Head of Divisional Office	Head of Divisional Office

Phase	Action	Responsible
Detection	Not applicable	
Assessment	Not applicable	
Treatment	Maintain awareness of staffing/sickness levels, briefing Divisional Office daily	Senior Management Team
	On stand by to provide urgent advice on their specialism (e.g. legal, finance, health & safety)	Senior Management Team
	Identify non-negotiable deadlines and deploy plans to achieve	Senior Management Team

	them	Services
	Engage with EOCs, ascertain requirements for space, support, admin, catering	Head of Estates and Facilities
	Ensure resilience of Agency IT systems	Head of Information Services
	Set expectations about level of support available to emergency response	Head of Information Services
	Ensure security of data, back up of email and data systems is in place	Head of Information Services
Escalation	Redeploy staff from development onto 1st and 2nd line support role	Head of Information Services
	Publish on-call rotas to incident teams, adjusting for current levels of absenteeism	Head of Information Services
	Ensure EOCs have sufficient IT equipment, if necessary commandeering PCs etc from elsewhere	Head of Information Services
	Ensure petty cash provisions are in place	Head of Finance
	Increase credit card limits	Head of Finance
	Publish on call rota for finance support	Head of Finance
	Redeploy staff to cover essential roles	Head of Finance
	Home working used in certain areas	Head of Finance
	Postpone, relocate or adjust meeting agendas, with agreement of the relevant chairs	Corporate Secretariat
	Ensure communication with Board and Executive Group and Committees is maintained	Corporate Secretariat
Recovery	Circulate up to date contact lists	Head of Divisional Office
	Collate Lessons Learned document, develop actions list	Senior Management Team
	Re-engage with internal and external stakeholders	Senior Management Team
	Provision of costing information to external parties	Head of Finance
	Coordinate withdrawal from short-term leased properties with other functions	Head of Estates and Facilities
	Act as independent verification of outcomes and outputs (e.g. costings)	Head of Internal Audit
Deal with incident-related investigations	Head of Internal Audit	

4 Agency Forward Planning

This document is an interim framework and will need to be revised in April 2013 when the HPA, together with a number of other agencies becomes part of Public Health England. NIBSC, currently part of the HPA and included in this document, will instead join the Medicines and Healthcare Products Regulatory Agency (MHRA).

Appendices

Appendix 1: Roles and responsibilities of the Department of Health, the National Health Service and the Cabinet Office

The following responsibilities have been identified in other plans with which the HPA's plan must integrate. They are repeated here in order to clarify responsibilities.

Government

The *UK Influenza Pandemic Preparedness Strategy 2011* outlines the government's roles as follows:

The Department of Health is the lead government department for pandemic preparedness and response. It has overall responsibility for developing and maintaining the contingency preparedness for the health and social care response, maintaining liaison with international health organisations and providing information and specialist advice to ministers, other government departments and responding organisations.

The devolved authorities (DAs) and England share a common strategic approach to pandemics and the four health departments work closely together during both planning and response. Strong clinical and senior official liaison across the four nations strengthens the UK-wide coordination and cooperation.

All government departments are directly or indirectly involved in preparing for an influenza pandemic and play an active role in informing and supporting contingency planning in their areas of responsibility.

The National Security Council (Threats, Hazards, Resilience and Contingencies) (NSC (THRC)) Committee, comprising ministers from across central government departments and the DAs, oversees and coordinates national preparations for all key UK risks including pandemic influenza.

During a pandemic NSC (THRC) will coordinate central government activities, make key strategic decisions such as the countermeasures required and determine UK priorities. It is also likely that Cabinet Office Briefing Room (COBR) will activate a Scientific Advisory Group for Emergencies (SAGE) to coordinate strategic scientific and technical advice to support UK cross-government decision making. The Department of Health, as lead government department, would work closely with the DAs using meetings of the four nations' health departments at official and ministerial level, which worked particularly well during the influenza A(H1N1)pdm09 pandemic, to agree health specific issues ahead of NSC(THRC) discussions. *Responding to emergencies – The UK Central Government Response Concept of Operations* details how the UK Government responds to emergencies.

NHS

The *Health and Social Care Influenza Pandemic Preparedness and Response* outlines the roles and responsibilities covered by the NHS thus:

The changes to the NHS and public health systems in England alter the roles and responsibilities of some organisations that are contributors to an emergency preparedness and response. However, the key 'must do's' in planning will not change and these are reflected throughout this document. They are:

- **A future influenza pandemic remains a threat** and may have a more severe impact than in 2009;
- **Joint planning** between all organisations, together with a cohesive approach for every response phase is essential;

- **Exercises and testing** are still needed on an ongoing basis within individual organisations and with partner organisations to test assumptions and interrelated aspects of plans;
- **Coordination** of a pandemic response is key to ensure best use of resources and to achieve the best outcome for the local area, and
- **Continuity** plans are needed to underpin pandemic influenza response, in common with many other emergency response plans.

The key principles described below for emergency preparedness and response in the transition period until April 2013 underpin the approach for preparing and dealing with a pandemic.

It is the responsibility of each local area to ensure that preparedness and response plans are drawn up and tested. For a pandemic, these plans will be based on the *UK Influenza Pandemic Preparedness Strategy 2011* and this guidance, and should involve all organisations involved in the response in their preparation and testing.

Clustered PCTs and SHAs will continue to have responsibility for the health aspects of emergency preparedness and response in this transition period. They will continue to work with the wider government resilience hubs established by the Department for Communities and Local Government, including the Local Resilience Fora (LRFs) which provide the focus of multi-agency planning emergencies (and which become Strategic Coordinating Groups (SCG) when responding to emergencies).

A more detailed breakdown of the NHS's roles and responsibilities can be found in Annex A of the same document (NHS's Health and Social Care Influenza Pandemic Preparedness Response).

Appendix 2: Roles of other key partner organisations

The WHO Influenza Collaborating Centre at Mill Hill has an international role as one of the four WHO international collaborating centres in the surveillance of new influenza strains, obtaining or sharing new virus isolates, properly characterising the new virus isolates and working on providing agreed diagnostic methods.

The World Health Organization will announce the onset of the various pandemic phases, coordinate international efforts to characterise and diagnose new viruses, coordinate international efforts to develop a new vaccine, and promote uniform international surveillance through the development of guidelines.

European Centre for Disease Prevention and Control (ECDC) provides timely information to the European Commission, the Member States, Community agencies and international organisations active within the field of public health and also provides scientific opinions and scientific and technical assistance, including training. ECDC also exchanges information, expertise and best practices, and facilitates the development and implementation of joint actions.

The European Influenza Surveillance Scheme will continue to monitor influenza activity across the EU and exchange timely information between the 23 participating national centres.

The European Union will coordinate a response between the member states of Europe including where possible sharing of surveillance strategies, entry screening processes and stocks of vaccine and antiviral medications. The European Centre for Disease Prevention and Control (ECDC) in Stockholm will play a major role in coordination and liaison between the public health authorities in individual member states.

The Department of Environment, Food and Rural Affairs (DEFRA) is responsible for surveillance and control of influenza in animal populations in the case of a contemporaneous or initial pandemic in animal populations.

NHS Direct provides a confidential 24 hour telephone health advice service staffed by trained nurses using standard algorithms to provide advice on self-treatment and direct people to treatment services as necessary. In addition, data on calls received for relevant clinical syndromes will be supplied to Health Protection Services, Colindale for the purpose of integrating into daily SitReps sent to DH and CCC.

The Royal College of General Practitioners through their Birmingham Research Unit Weekly Returns Service contributes to national surveillance by reporting new episodes of influenza and other respiratory infections.

The European Union will carry out the licensing of candidate influenza vaccines in preparation for a pandemic.

The UK Vaccine Industry Group (UKVIG) will collaborate with the DH and other government agencies over the supply of pandemic vaccines for the UK.

Health Protection Scotland (HPS) works in partnership with others, to protect the public in Scotland from being exposed to hazards that damage their health and to limit any impact on health when such exposures cannot be avoided.

National Public Health Service for Wales (NPHS) provides the resources, information and advice to enable the Welsh Assembly Government, Health Commission Wales, Local Health Boards, Local Authorities and NHS Trusts to discharge their statutory public health functions.

Public Health Agency Northern Ireland was launched 1st April 2009 and works in partnership with others, to protect the public in Northern Ireland from being exposed to hazards which damage their health and to limit any impact on health when such exposures cannot be avoided.

Appendix 3: Summary of the epidemiology of pandemic influenza

Influenza is an acute viral infection typically characterised by the clinical triad of sudden onset, fever, and cough with or without a sore throat or other respiratory symptoms. Other common symptoms include headache, prostration and muscle and joint pains. The acute symptoms can last for about one week, although full recovery may take longer. Influenza is a seasonal illness, typically occurring in a six to eight week period during the winter months. The very young, pregnant women, the elderly and people with underlying medical conditions such as heart or chest disease are at particular risk of serious illness from influenza and its complications (mainly bacterial pneumonias). An average of 3-4000 (range 0-20,000) influenza-related excess deaths per annum are estimated to occur in England and Wales, predominantly among the elderly. Variants of influenza A/H3N2 and A/H1N1 and influenza B typically circulate worldwide each year.

Pandemic influenza occurs when a new subtype or strain of influenza A emerges in humans, which is capable of producing clinical illness, spreads efficiently, and against which there is little or no pre-existing immunity in the worldwide population. As a consequence, the scale and severity of illness (and hence consequences) of a pandemic could be substantially higher than even the most severe winter epidemics (although this was not the case in the most recent pandemic). There may also be changes in the age-distribution of cases compared with non-pandemic years; mortality in typical seasonal influenza is usually confined to older age groups but in pandemics may be increased in younger age groups. The size of any increase in morbidity and mortality and the extent to which a shift in age distribution occurs will depend on a variety of factors including the nature of the pandemic virus and pre-existing immunity. In the 20th and 21st centuries, pandemics occurred in 1918 (A/H1N1), 1957 (A/H2N2) 1968 (A/H3N2) and 2009 - A(H1N1)pdm09.

Clinical attack and case fatality rate

The clinical attack rate is the proportion of a population with symptomatic illness. Based on pandemics of the 20th century, planning assumptions have been based on a reasonable worst-case-scenario of an attack rate of up to 50% and a mortality rate of up to 2.5%, should no treatment prove effective. The DH position (outlined in the *UK Influenza Pandemic Preparedness Strategy 2011*) is that the combination of a high attack and high mortality rate is, however, relatively improbable.

Case fatality rate

The case fatality rate is the proportion of persons with symptomatic illness who die. In the pandemics of the 20th and 21st centuries, case fatality rates have varied, ranging between 2-2.5% in the 1918 pandemic and 0.025% in 2009.

Age-specific impact

Age specific impact is difficult to predict in advance.^{9,10} In the UK in 1918 and 2009 pandemics, a dramatic shift in the age-specific impact in terms of morbidity and mortality occurred towards younger adults. Younger age groups account for proportionally more mortality in influenza pandemics than in seasonal influenza epidemics.¹¹

In terms of the age specific impact on the clinical attack rate, for every pandemic between 1918 and 2009 (excepting 1968 where there was no difference) clinical attack rates have been highest in school age children when compared to adults. In seasonal influenza the reverse is usually true.

Timing and seasonality

Although pandemic viruses may emerge at any time of the year, evidence from the pandemics of the 20th/21st centuries suggests that during post-pandemic years, heightened influenza activity may be expected for several seasons. For the influenza A(H1N1)pdm09 the greatest impact was during the winter season of 2010/2011 rather than during the pandemic itself (2009). Of the 20th/21st century pandemics, that of 1918/19 produced three separate epidemic waves each separated by 3-6 months. In 1957 there was a single wave only. In the pandemic of 1968/69 there were two waves.

Appendix 4: Summary of modelling work

Modelling has been employed to explore many aspects of influenza pandemics, including the likely spread both temporally and spatially, and the effectiveness of potential control programmes. Inherent uncertainty remains in the results obtained from modelling, due in part to a scarcity of data from past pandemics, and limited available data from the pandemic in 2009 on important factors such as dynamic changes in contact patterns and health systems, the impact of the media on healthcare-seeking behaviour and widespread popular use of the internet. Nevertheless, the modelling results broadly suggest that:

Depending upon the location and nature of the initial pandemic cases, it has been suggested that a pandemic may be containable at source provided that a substantial number of cases of illness or death are detected as a cluster, in a rural part of the world, whilst the number of infections is still relatively small and there is rapid application of a combination of stringent social distance measures, area quarantine and geographically targeted antiviral prophylaxis with up to 3 million courses of antivirals¹². However, A(H1N1)pdm appears to have been spreading in Mexico for some time before it was first detected in the USA¹³ and it appears to have spread to Australia before it was first detected in the USA. This might well be a feature of future pandemics that would ultimately thwart containment strategies.

Containment strategies to prevent a pandemic spreading in the UK are unlikely to be effective as simultaneous, multiple importations would be expected, and antiviral stocks would be rapidly depleted.¹⁴ If some infectious individuals are not symptomatic, or symptomatic cases do not seek care or delay obtaining care, then interventions could not be implemented rapidly enough or with sufficient coverage to be effective. Treatment, prophylaxis, and effected school closure occurring in spring 2009 did not contain the pandemic.

International travel restrictions are highly unlikely to interrupt the spread of an epidemic significantly.^{14,15} For example, imposing a 90% restriction on travel to the UK might delay the peak of a pandemic by only 1 to 2 weeks. Entrance screening appears less effective than general travel restrictions.¹⁶ The majority of those who board a flight incubating influenza would not display symptoms until after arrival and so would not be prevented from entering the country.

Treatment of confirmed cases and prophylaxis of contacts in the early stage of the UK 2009 pandemic reduced transmission by an estimated 16% (95% Confidence Interval 12%-20%).¹⁷ Prompt treatment with neuraminidase inhibitors can reduce the severity of disease in patients, and if used widely and rapidly enough might also reduce overall clinical attack rates. Using near-patient tests before distributing antivirals in the community is unlikely to be effective or cost-effective.¹⁸

Prior vaccination, even with a poorly matched (pre-pandemic) vaccine and antibiotic treatment of those cases with complications could reduce the severe impact of the pandemic on hospitalisation and mortality.¹⁹

Social distancing, specifically school closures might reduce clinical attack rates in children and slow epidemic spread somewhat from reduced interpersonal contacts.^{14,20} School holidays in summer 2009 clearly reduced rates of A/H1N1 transmission. However, the impact of school closures depends on the nature (local/national, pre-emptive/reactive) and duration of closures and may not necessarily have the same effect as school holidays where interpersonal contacts may be further reduced by vacations.

It is envisaged that new modelling approaches which had been developed prior to the 2009 pandemic and further developed and refined in light of the experiences during the 2009 pandemic will be used during future pandemics.

During the early stages of a pandemic individual-level data from the FF100 will provide the most complete data source and this together with data from ad-hoc outbreak studies will provide an initial assessment of important epidemiological parameters

Subsequently aggregate data from a variety of surveillance systems will be used in an age and regionally structured SEIR model incorporated within a Bayesian synthesis framework of multiple evidence sources²¹ and alternative Bayesian evidence synthesis approaches²² to provide both current estimates of important epidemiological parameters and projections with uncertainties of the evolution of the pandemic required to assess the possible future demand for health services.

Appendix 5: Summary of pandemic infection control assumptions

Infection control assumptions for pandemic influenza are based on current knowledge about seasonal influenza viruses. These include:

Person-to-person spread of human influenza viruses is well established

The patterns of transmission observed during nosocomial outbreaks of influenza suggest that large droplets and contact (direct and indirect) are the most important and most likely routes of spread

Airborne or fine droplet spread may occur in some settings (e.g. during the performance of aerosol generating procedures in healthcare settings)

The incubation period of human influenza ranges from 1-5 days (typically 2-3)

Infectivity is proportional to symptom severity and maximal in the first few days after the onset of symptoms

The period of communicability is typically up to 7 days after symptom onset in adults and possibly longer in children, although longer periods of virus shedding have been documented in a small proportion of children

Virus excretion may be considerably prolonged in immunocompromised patients.

Virus may be recovered from infected but pre-symptomatic persons, but there is little published evidence to support person-to-person transmission of influenza from a pre-symptomatic individual to a susceptible host

Influenza viruses are easily deactivated by washing with soap and water, alcohol based hand sanitizers, and cleaning with normal household detergents and cleaners

Pandemic infection control measures in all general settings will be based around:

Persons with symptoms staying in their own homes

Persons who develop symptoms at work or whilst away from home, returning to home as quickly as reasonably possible

Good respiratory hygiene practiced by all

Frequent hand-washing practiced by all

Appropriate cleaning of frequently touched hard surfaces in the home and in public places

Avoidance of unnecessary contact with others and unnecessary overcrowding (reduction of contact rates)

Rapid access to antiviral treatment for symptomatic persons (reduction in transmissibility)

In health and communal care settings, additional measures will include:

Prompt recognition (and treatment) of staff with influenza

Exclusion of staff with respiratory symptoms

Segregation of staff into those dealing with influenza patients and those not (with exceptions)

Maintaining physical and/or temporal separation between 'flu' and 'non-flu' patients/clients

Standard Infection Control Principles

Droplet Precautions

HPA Pandemic Influenza Strategic Framework: October 2012

Personal Protective Equipment according to risk of exposure

Environmental cleaning and disinfection

Appendix 6: World Health Organisation (WHO) International Phases

In the 2009 revision of the phase descriptions, WHO has retained the use of a six-phased approach for easy incorporation of new recommendations and approaches into existing national preparedness and response plans. The grouping and description of pandemic phases have been revised to make them easier to understand, more precise, and based upon observable phenomena. Phases 1–3 correlate with preparedness, including capacity development and response planning activities, while Phases 4–6 clearly signal the need for response and mitigation efforts. Furthermore, periods after the first pandemic wave are elaborated to facilitate post pandemic recovery activities

Table: WHO Pandemic Phase Descriptions

Phase 1	No animal influenza virus circulating among animals has been reported to cause infection in humans.
Phase 2	An animal influenza virus circulating in domesticated or wild animals is known to have caused infection in humans and is therefore considered a specific potential pandemic threat
Phase 3	An animal or human-animal influenza reassortant virus has caused sporadic cases of small clusters of disease in people, but has not resulted in human-to-human transmission sufficient to sustain community-level outbreaks.
Phase 4	Human-to-human transmission (H2H) of an animal or human-animal influenza reassortant virus able to sustain community-level outbreaks has been verified
Phase 5	The same identified virus has caused sustained community level outbreaks in two or more countries in one WHO region.
Phase 6	In addition to the criteria defined in Phase 5, the same virus has caused sustained community level outbreaks in at least one other country in another WHO region.
Post-Peak Period	Pandemic disease levels in most countries with adequate surveillance will have dropped below peak observed levels
Post-Pandemic Period	Levels of influenza activity have returned to the levels seen for seasonal influenza in most countries with adequate surveillance.

Appendix 7: Glossary

ACDP	Advisory Committee on Dangerous Pathogens
AMRS	Antimicrobial Resistance Stewardship
BIS	Business Innovations and Skills
CCC	Civil Contingencies Committee
CCDC	Consultant in Communicable Disease Control
CCS	Civil Contingencies Secretariat
CDC	Centre for Disease Control
CEO	Chief Executive Officer
CEPR (HPA)	Centre for Emergency Preparedness and Response
CMO	Chief Medical Officer
CNRL	Community Network of Reference Laboratories for Human Influenza
COBR	Cabinet Office Briefing Room
COSHH	Control of Substances Hazardous to Health
CRCE (HPA)	Centre for Radiation, Chemicals and Environmental Hazards
CSG	Core Strategic Group
DA	Devolved Administration
DCSF	Department of Children, Schools and Families
DEFRA	Department for Environment Fisheries and Rural Affairs
DH	Department of Health
DHSSPNI	Department of Health, Social Services and Public Safety
DPHS (HPA)	Director of Public Health Strategy
EA	Environment Agency
ECDC	European Centre for Disease Prevention and Control
EMA	European Medicines Agency
EOC	Emergency Operation Centre
ERD	Emergency Response Department
ERL	Essential Regulatory Laboratories
FETP	Field Epidemiology Training Programme
FRoD (HPA)	Finance and Resources Division
FSA	Food Standards Authority
GIP	Global Influenza Program
GISN	Global Influenza Surveillance Network
GISRS	Global Influenza Surveillance and Response System
GMP	Good Manufacturing Practice
GNN	Government News Network
HCAI	Healthcare Associated Infections
HO	Home Office
HPA	Health Protection Agency
HPS	Health Protection Scotland
HPS (HPA)	Health Protection Services
HPU (HPA)	Health Protection Unit

HSE	Health and Safety Executive
IERP (HPA)	Incident and Emergency Response Plan
IFPMA	International Federation of Pharmaceutical Manufacturers & Associations
IKM	Information Knowledge Management
IMRG	Incident Management Recovery Group
IRCT (HPA)	Incident Response Co-ordination Team
ISIS	Influenza Surveillance Information Service
JCVI	Joint Committee for Vaccination and Immunisation
MCA	Mission Critical Activities
MHRA	Medicine & Healthcare Products Regulatory Agency
MICC (DH)	Major Incident Coordination Centre
MOD	Ministry of Defence
MRA	Microbial Risk Assessment
NAW	National Assembly of Wales
NECC	National Emergency Coordination Centre
NEPNEI	National Expert Panel on New and Emerging Infections
NHS	National Health Service
NHSD	NHS Direct
NIBSC (HPA)	National Institute of Biological Standards and Control
NID	National Incident Director
NIMR	National Institute for Medical Research
NPHS	National Public Health Service (Wales)
OGC	Office of Government Commerce
OGD	Other Government Department
PCR	Polymerase Chain Reaction
PCT	Primary Care Trust
PEP	Post Exposure Prophylaxis
PIO (HPA)	Pandemic Influenza Office
PISG	Pandemic Influenza Strategic Group
PWG	Pandemic Working Group
R&D	Research and Development
R/HEPA (HPA)	Regional/Health Emergency Planning Adviser
RCGP	Royal College of General Practitioners
RDPH	Regional Director of Public Health
RGCP	Royal College of General Practitioners
RPHG	Regional Public Health Group
RTO	Recovery Time Objective
SAGE	Scientific Advisory Group for Emergencies
SEPR	Strategic Emergency Planning and Response
SHA	Strategic Health Authority
SitRep	Situation Report
SMN (HPA)	Specialist Microbiology Network
SO15	Counter Terrorism Command

SOP	Standard Operating Procedure
SPI	Scientific Pandemic Influenza
STAC	Science and Technical Advice Cell
TOIL	Time Off In Lieu
UK	United Kingdom
UKVIG	UK Vaccine Industry Group
WHO	World Health Organization
WTD	Working Time Directive

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